RANGER
Communications, Inc.

REV. A
Dec. 2004

TEXAS RANGER™

TR-127GK/DX

40 CHANNEL

AM CB MOBILE RADIO



Service Manual

TABLE OF CONTENTS

1.0 GENERAL

Model	TR-127GK, TR-127DX
Channels	40
Frequency Range	26.965 – 27.405 MHz
Emission Modes	AM
Frequency Control	Phase Lock Loop (PLL) synthesizer
Frequency Stability	0.001 %
Operating Temperature Range	-30°C to +50°C
Antenna Impedance	50 Ohms
Input Voltage	13.8V DC
Antenna Connector	Standard SO-239 type
Dimensions	7 1/4”(W) x 9”(D) x 2 1/4”(H)
Weight	3.4 lbs.

1.1 TRANSMITTER

RF Power Output	AM : 4 watts
RF Transmit Modes	AM
Spurious Emissions	- 60dB
Audio Frequency Response	300 to 2500 Hz
Microphone	Dynamic
Output Indicators	Meter shows incoming signal strength, RF output power, and SWR level. Transmit LED glows red when transmitter is in operation.

1.2 RECEIVER

Sensitivity For 10dB S/N	< 1.0µV
IF Frequency	AM: 10.695 MHz 1st IF, 455 KHz 2nd IF
Image Rejection	- 50dB
Adjacent Channel Selectivity	- 60dB
RF Gain Control	45dB adjustable for optimum signal reception
Automatic Gain Control (AGC) Figure Of Merit	100mV for 10dB Change in Audio Output
Squelch	Adjustable; threshold less than 0.5µV
Noise Blanker	RF type
Audio Output Power	2.5W @ 10% THD
Audio Frequency Response	300 to 2500 Hz
Built-in Speaker	8 Ohms, 4 Watts
External Speaker (Not Supplied)	8 Ohms, 4 Watts

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

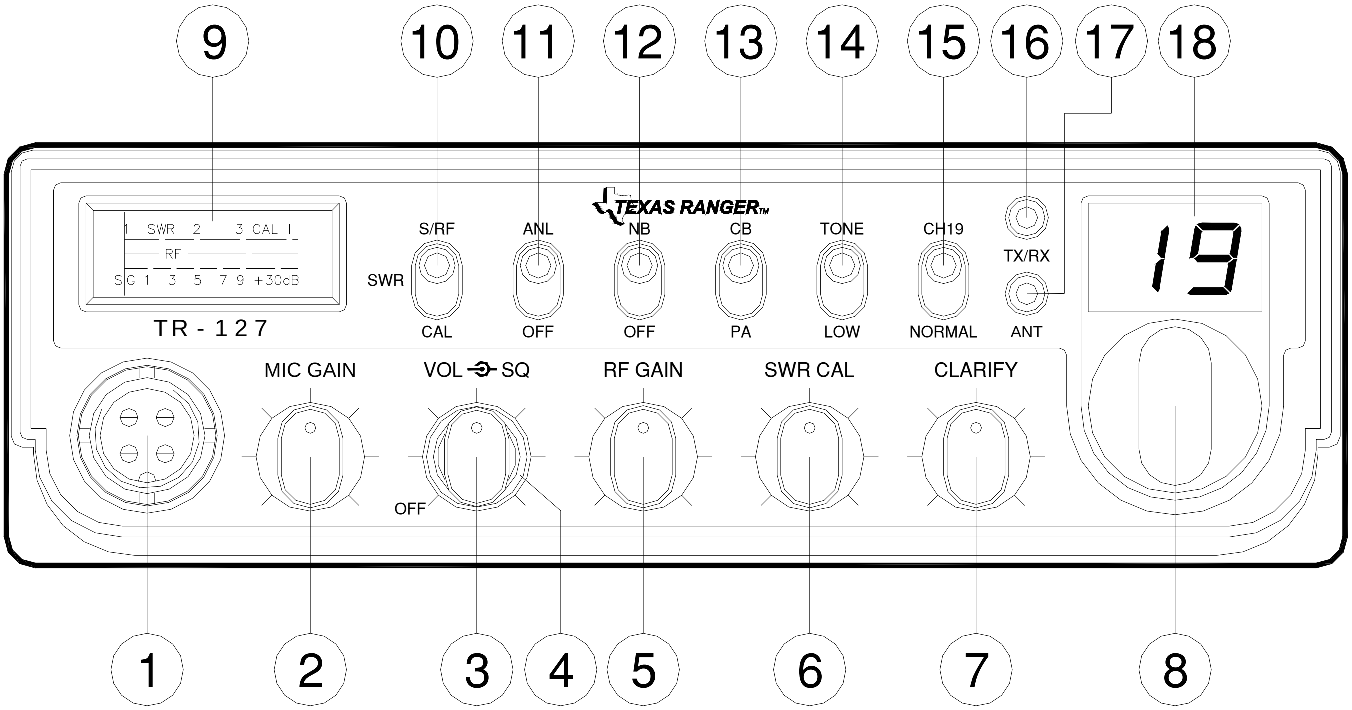


Figure 2-1 Front Panel

2.0 INTRODUCTION

This section explains the basic operating procedures for the TR-127GK or TR-127DX mobile CB radio.

2.1 CONTROLS AND CONNECTIONS

2.1.1 FRONT PANEL

Refer to the above Figure 2-1 for the location of the following controls.

1. **MICROPHONE JACK:** Used to connect microphone for voice source.

2. **MIC GAIN CONTROL:** Adjust the microphone gain in the transmit and PA modes. This controls the gain to the extent that full talk power is available several inches away from the microphone. In the Public Address (PA) mode, the control function as the volume control.

3. **ON/OFF VOLUME CONTROL:** This knob controls the volume and power to the radio. To turn radio on, rotate the knob clockwise. Turning the knob further will increase the volume of the receiver.

4. **SQUELCH CONTROL:** This knob is used to eliminate background noise being heard through the receiver, which can be disturbing when no transmissions are being heard through the receiver. To use this feature, turn the knob fully counterclockwise and then turn clockwise slowly until the

background noise is just eliminated. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at a maximum clockwise setting.

5. **RF GAIN CONTROL:** This control is used to reduce the gain of the RF (receive) amplifier under strong signal conditions.

6. **SWR CAL CONTROL:** This SWR CAL control allows the user to calibrate the SWR meter.

7. **CLARIFY CONTROL:** Allows tuning of the receive frequency above or below the channel frequency.

8. **CHANNEL SELECTOR:** This control is used to select the desired transmit and receive channel.

9. **FRONT PANEL METER:** The front panel meter allows the user to monitor incoming signal strength, RF output power and SWR level.

10. **S-RF/CAL/SWR SWITCH:** In the S-RF position, the meter will indicate the strength of the signal being received, as well as the relative RF output of transmission. When calibrating the SWR meter, you need to put this switch in the CAL position. To use the meter to measure the standing wave ratio, turn the switch to the SWR position.

11. **ANL/OFF SWITCH:** In the ANL position, the Automatic Noise Limiter (ANL) in the audio circuits is activated.

12. **NB/OFF SWITCH:** In the NB position, the Noise Blanker (NB) is activated. The NB is very effective in eliminating repetitive impulse noise such as ignition interference.

13. **PA/CB SWITCH:** Select the mode of operation. In the PA position, the radio acts as public address amplifier. Your voice will come out of the speaker that is plugged into the PA. SP. jack on the rear panel. The radio does not operate when you are in the PA mode. In the CB position, the PA function is disabled and the radio will transmit and receive on the speaker that is connected.

14. **TONE SWITCH HI/LO:** This switch changes tone quality in receive only. In LO position, bass is increased and in HI position, treble is increased.

15. **CH19/NORMAL SWITCH:** Channel 19 switch is used for instant to information channel 19.

16. **TX/RX LED:** The red LED indicates the unit is in the transmit mode. The green LED indicates the unit is in the receive mode.

17. **ANT LED:** This LED lights red when your SWR is higher than about 3:1. This is not an exact indicator of 3:1 SWR, but it is an indication that you should check your SWR reading.

18. **CHANNEL DISPLAY:** The channel display indicates the current selected channel.

REAR PANEL

Figure 2-2 represents the location of the following connections:

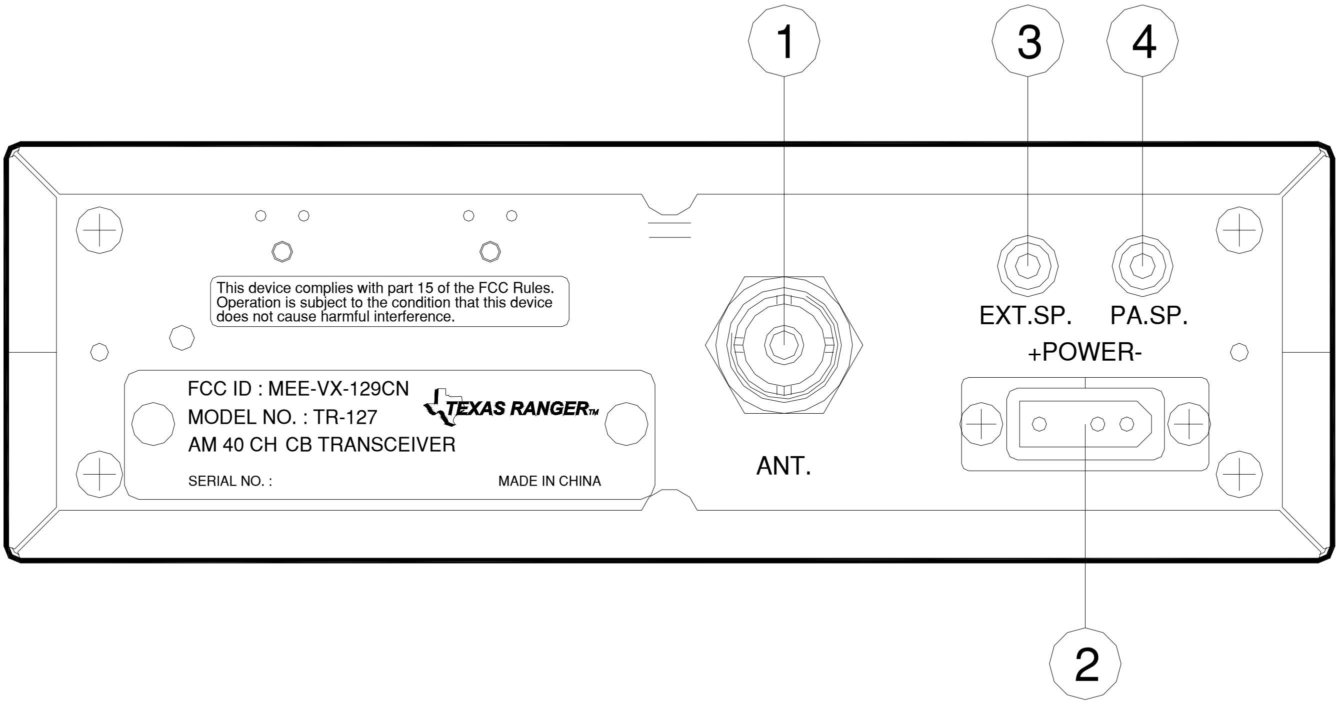


Figure 2-2 Rear Panel

1. **ANTENNA:** This jack accepts a 50-ohm coaxial cable with a PL-259 type plug.

2. **DC POWER:** This jack accepts the 13.8V DC power cable with built-in fuse. The power cord provided with the radio has a black and red wire. The black goes to negative and red goes to positive.

3. **EXT SP.:** This jack accepts a 4 to 8 ohm, 5-watt external speaker. When the external speaker is connected to this jack, the built-in speaker will be disabled.

4. **PA SP.:** This jack is for PA operation. Before operating, you must first connect a PA speaker (8 ohms, 4W) to this jack.

2.1.3 FREQUENCY CHART

CHANNEL	CHANNEL FREQUENCY (MHz)	CHANNEL	CHANNEL FREQUENCY (MHz)
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

2.2 MICROPHONE

The push-to-talk switch on the microphone controls the receiver and transmitter. Press the switch and the transmitter is activated, release switch to receive. When transmitting, hold the microphone two inches from your mouth and speak clearly in a normal voice. This transceiver comes complete with a low impedance dynamic microphone.

2.3 OPERATION

2.3.1 PROCEDURE TO RECEIVE

1. Be sure that the power source, microphone and antenna are connected to the proper connectors before going to the next step.

2. Turn **VOL** knob clockwise to apply power to the radio.

3. Set the **VOL** to a comfortable listening level.

4. Set the **MODE** switch to the desired mode.

5. Listen to the background noise from the speaker. Turn the **SQUELCH** knob slowly clockwise until the noise just disappears. The **SQUELCH** is now properly adjusted. The receiver will remain quiet until a signal is actually received. Do not advance the control too far or some of weaker signals will not be heard.

6. Set the **CHANNEL** selector switch to the desired channel.

7. Set the **RF GAIN** control fully clockwise for maximum RF gain.

8. Adjust the **CLARIFY** control to optimize AM signals.

2.3.2 PROCEDURE TO TRANSMIT

1. Select the desired channel of transmission

2. Set the **MIC GAIN** control fully clockwise.

3. If the channel is clear, depress the push-to-talk switch on the microphone and speak in a normal voice.

2.4 ALTERNATE MICROPHONES AND INSTALLATION

For best results, the user should select a low impedance dynamic type microphone or a transistorized microphone. Transistorized type microphones have a low output impedance characteristic. The microphones must be provided with a four-lead cable. The audio conductor and its shielded lead comprise two of the leads. The third lead is for transmit control and the fourth is for receiving control.

The microphone should provide the functions shown in the schematic below (Figure 2-3).

4 WIRE MIC CABLE

Pin Number	Mic Cable Lead
1	Audio Shield
2	Audio Lead
3	Transmit Control
4	Receive Control

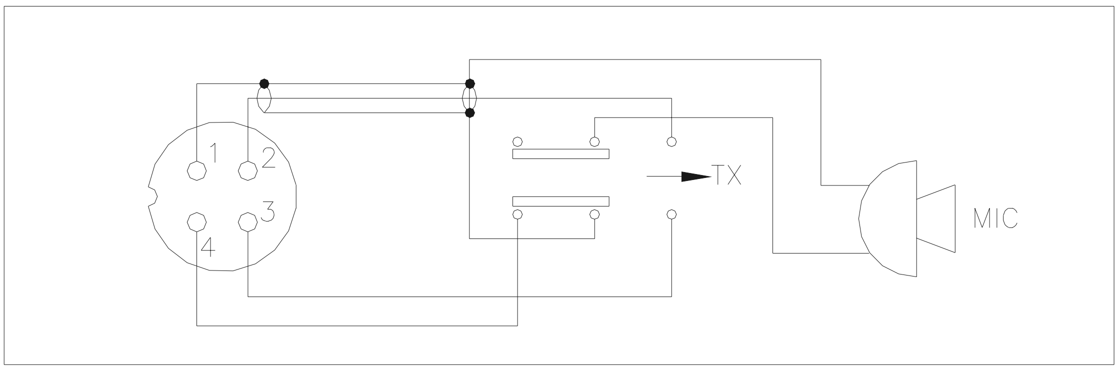


Figure 2-3 Your Transceiver Microphone Schematic

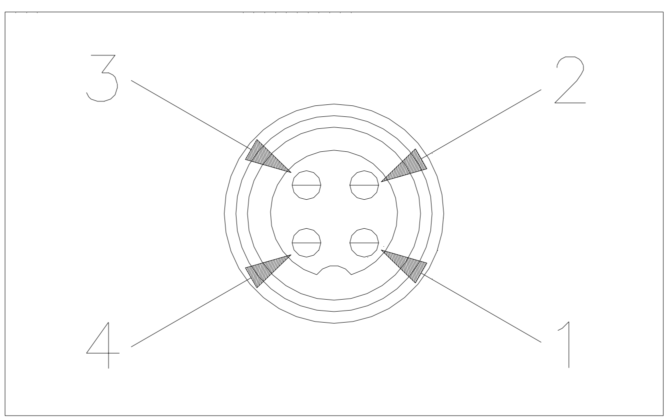


Figure 2-4 Microphone plug and pin numbers viewed from rear of pin receptacle.

3.0 INTRODUCTION

This section explains the technical theory of operation for the TR-127GK or TR-127DX mobile CB radio.

3.1 PLL CIRCUIT

The Phase Lock Loop (PLL) circuit is responsible for developing the receiver's first local oscillator signal and the transmitter's exciter signal. The PLL circuit consists primarily of IC2, IC3, and Q23. The PLL circuit is programmed by the rotary channel switch GPS-668. The GPS-668 communicates the correct binary data information to the programmable divider inside of IC2. IC2 then controls the VCO (Voltage Controlled Oscillator) to oscillate on the correct frequency. This signal is fed either into the receiver's first mixer (for receive operation) or the transmitter's mixer (for transmit operation).

3.2 RECEIVER CIRCUIT

The incoming RF signal comes into the radio via the antenna and into the front-end pre-amp, Q12. The RF signal is fed into the mixer circuit of Q13 and then into the AM IF section of the receiver. The signal is then detected by the AM detector and then fed to the audio amplifier section of the receiver and finally out to the speaker.

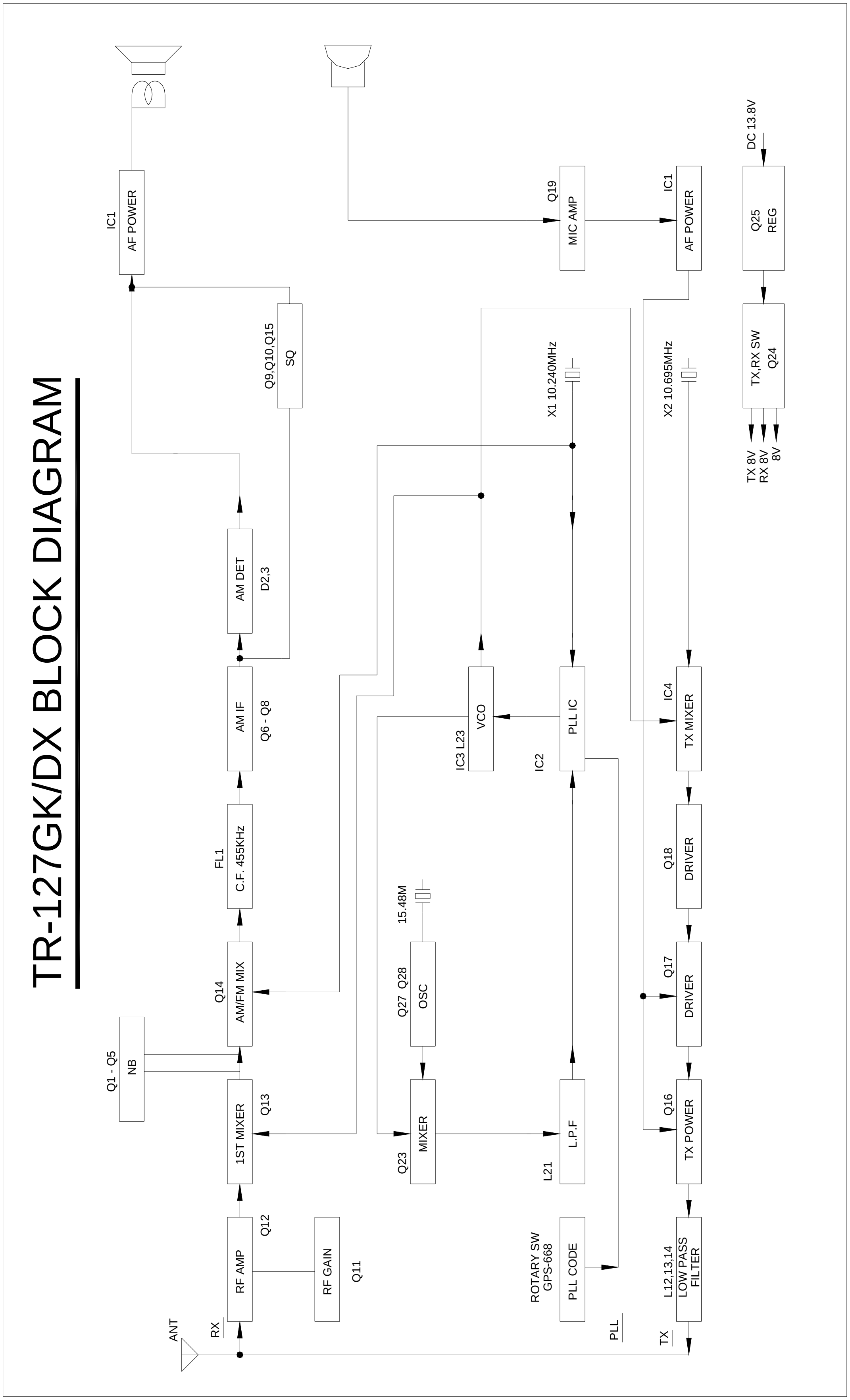
3.3 TRANSMITTER MODULATION CIRCUIT

(1) The transmitter modulation circuit modulates the low-level RF signal from the PLL exciter circuit with the user's audio voice signal from the microphone. The audio from the microphone is then amplified and fed into the transmit amplifier circuit.

(2) The AF power amplifier modulates the last RF amplifier, which produces a true amplitude modulated RF signal.

3.4 TRANSMITTER AMPLIFIER CIRCUIT

The transmitter takes the basic exciter signal from IC4 of the TX mixer and amplifies it through a series of amplifiers consisting of Q18, Q17 and Q16 where it is sent out to the antenna connector.


TR-127GK/DX BLOCK DIAGRAM
ANT
RX
TX
PLL
RF AMP
Q12
RF GAIN
Q11
1ST MIXER
Q13
NB
Q1 - Q5
AM/FM MIX
Q14
C.F. 455KHz
FL1
AM IF
Q6 - Q8
AM DET
D2,3
SQ
Q9,Q10,Q15
AF POWER
IC1
MIXER
Q23
OSC
Q27 Q28
15.48M
VCO
IC3 L23
L.P.F
L21
PLL IC
IC2
PLL CODE
ROTARY SW
GPS-668
X1 10.240MHz
X2 10.695MHz
MIC AMP
Q19
AF POWER
IC1
TX MIXER
IC4
DRIVER
Q18
DRIVER
Q17
TX POWER
Q16
LOW PASS
FILTER
L12,13,14
REG
Q25
DC 13.8V
TX,RX SW
Q24
TX 8V
RX 8V
8V

4.0 REQUIRED TEST EQUIPMENT

① DC Power Supply (13.8VDC, 10A)
② RF Wattmeter (10W)
③ Multi-meter
④ Automatic Modulation Meter
⑤ Audio Signal Generator
⑥ Frequency Counter (100 MHz)
⑦ RF Signal Generator (100 MHz)
⑧ Automatic Distortion Meter
⑨ Oscilloscope (50 MHz)
⑩ Sinad Meter

4.1 ALIGNMENT PROCEDURES

This transceiver has been aligned at the factory and does not require any adjustments at installation. The required test equipment listed are used for the test setup or alignment shown in Figure 4-1 Transmitter Test Setup and Figure 4-2 Receiver Test Setup. These test setups are used in part or total during the following adjustments. Refer to page 14 for adjustment locations.

4.1.1 PLL ALIGNMENT

ITEM	U.U.T. SETTING	ADJUST POINT	MEASUREMENT
VCO	Set radio to CH 1 AM RX mode. Connect Multi-meter to TP9.	L23	2.5 VDC ± 0.1
	Connect Oscilloscope to TP3.	L24	Adjust for max.
AM Frequency	Set radio to CH 19 AM RX mode. Connect Frequency Counter to TP3.	L29	16.4900MHz ± 20Hz
AM OSC	Set radio to CH 19 AM TX mode. Connect Frequency Counter to TP5.	L23	10.6950MHz ± 10Hz

4.1.2 TRANSMITTER ALIGNMENT

ITEM	U.U.T. SETTING	ADJUST POINT	MEASUREMENT
TX Power	Set radio to CH 19 AM TX mode. Connect RF Power Meter to antenna jack.	L26, L27, L18	MAX > 4W Balance Power Between CH. 1 - 40
AM TX Power	Set radio to CH 19 AM TX mode.	L14	3.8 W
RF Power Meter	Set radio to CH 19 AM TX mode. Set S/RF /SWR/CAL Switch to S/RF position.	VR5	For a needle reading of between green and red area on TX PWR scale.
AM TX Modulation	Set radio to CH 19 AM TX mode. AF signal 30mV, 1 KHz to microphone. Set MIC Gain fully clockwise.	VR4	For a needle reading of 90% on the external modulation meter.
ANT LED	Set radio to CH 19 AM TX mode. Connect 150 ohms load to antenna jack	VR6	Adjust very slowly until ANT LED just light on.

4.1.3 RECEIVER ALIGNMENT

ITEM	U.U.T. SETTING	ADJUST POINT	MEASUREMENT
AM Sensitivity	Set radio to CH 19 AM RX mode. Set RF GAIN fully clockwise. Set SQ fully counter-clockwise. Set VOL Control at 2 o'clock. Connect RF SG to antenna jack Frequency 27.185 MHz, 1uV. Mod 30%.	L4, L5,L6,L7, L8, L9, L20,L2, L3 VR1	Audio Output > 2V S/N > 10 dB.
	Set radio to CH 40 AM RX mode. RF SG setting 27.405 MHz. Set radio to CH 1 AM RX mode. RF SG setting 26.965 MHz.	L4,L5	For Balance Between CH 1 and CH 40.
NB Adjust	Set radio to CH 19 AM RX mode RF SG setting 27.205 MHz, 100uV. Mod 30%. Set switch to NB position. Connect Oscilloscope to D1 cathode.	L1	Adjust for max.
AM Squelch	Set radio to CH 19 AM RX mode. Set SQ Control fully clockwise. RF SG setting 27.185 MHz, 1mV. Mod 30%.	VR3	Adjust very slowly until squelch just closes.
AM S-Meter	Set radio to CH 19 AM RX mode. RF SG setting 27.185 MHz, 100uV. Mod 30%.	VR2	For a reading of "9" on the "S" scale.

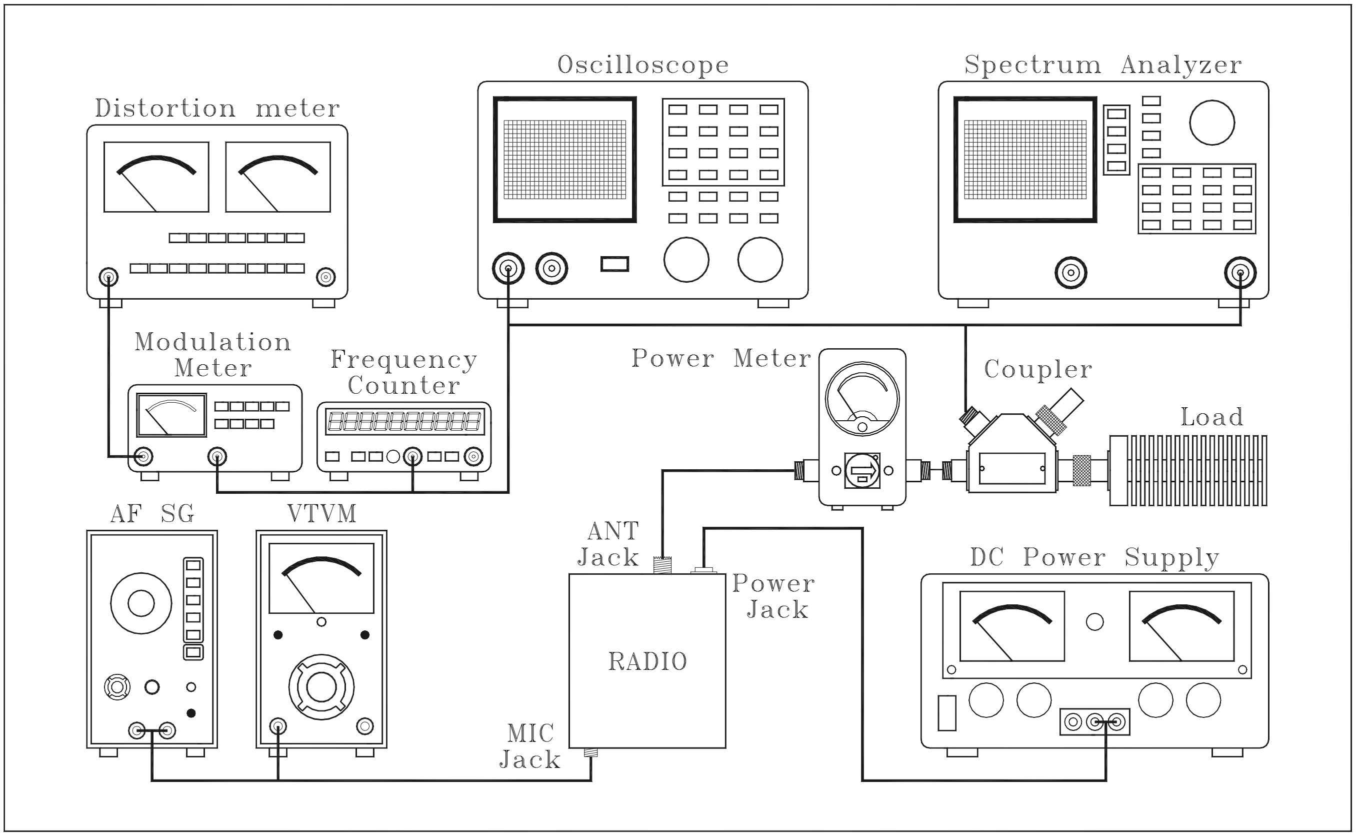


Figure 4-1 Transmitter test setup

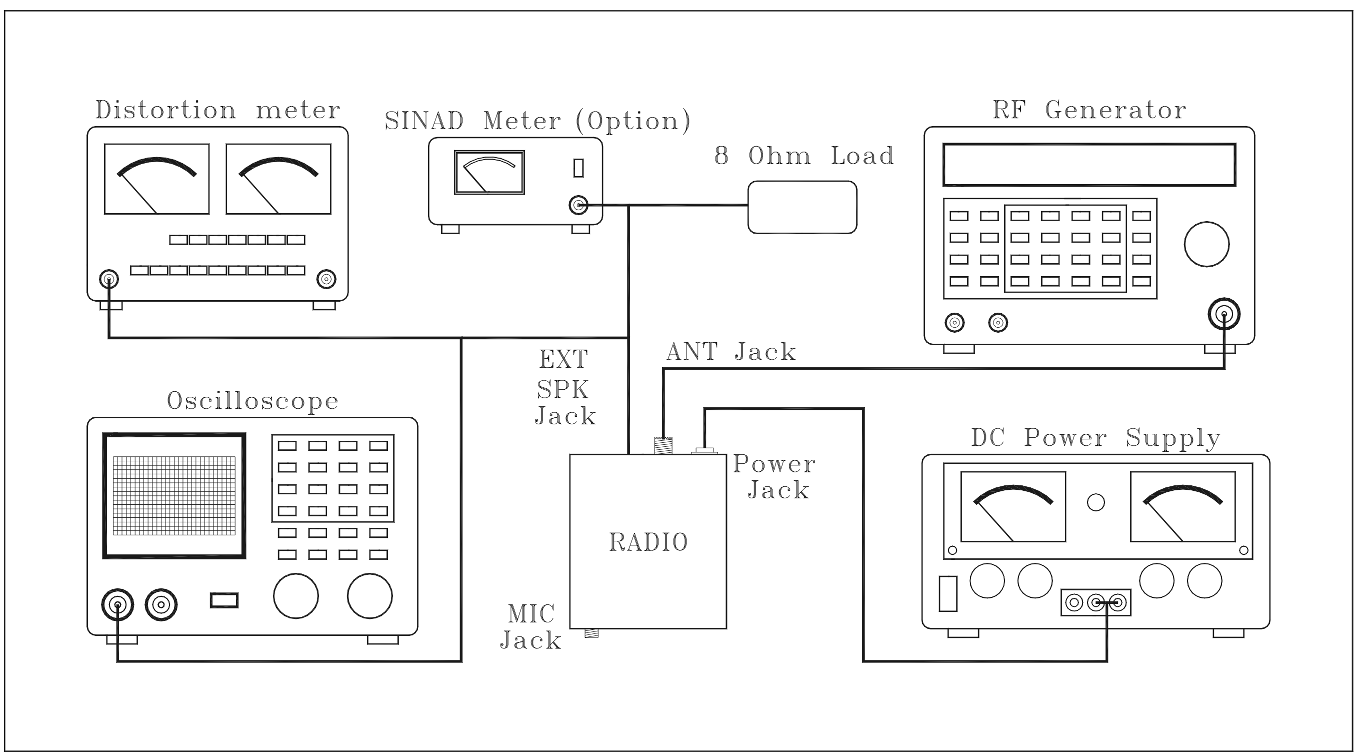
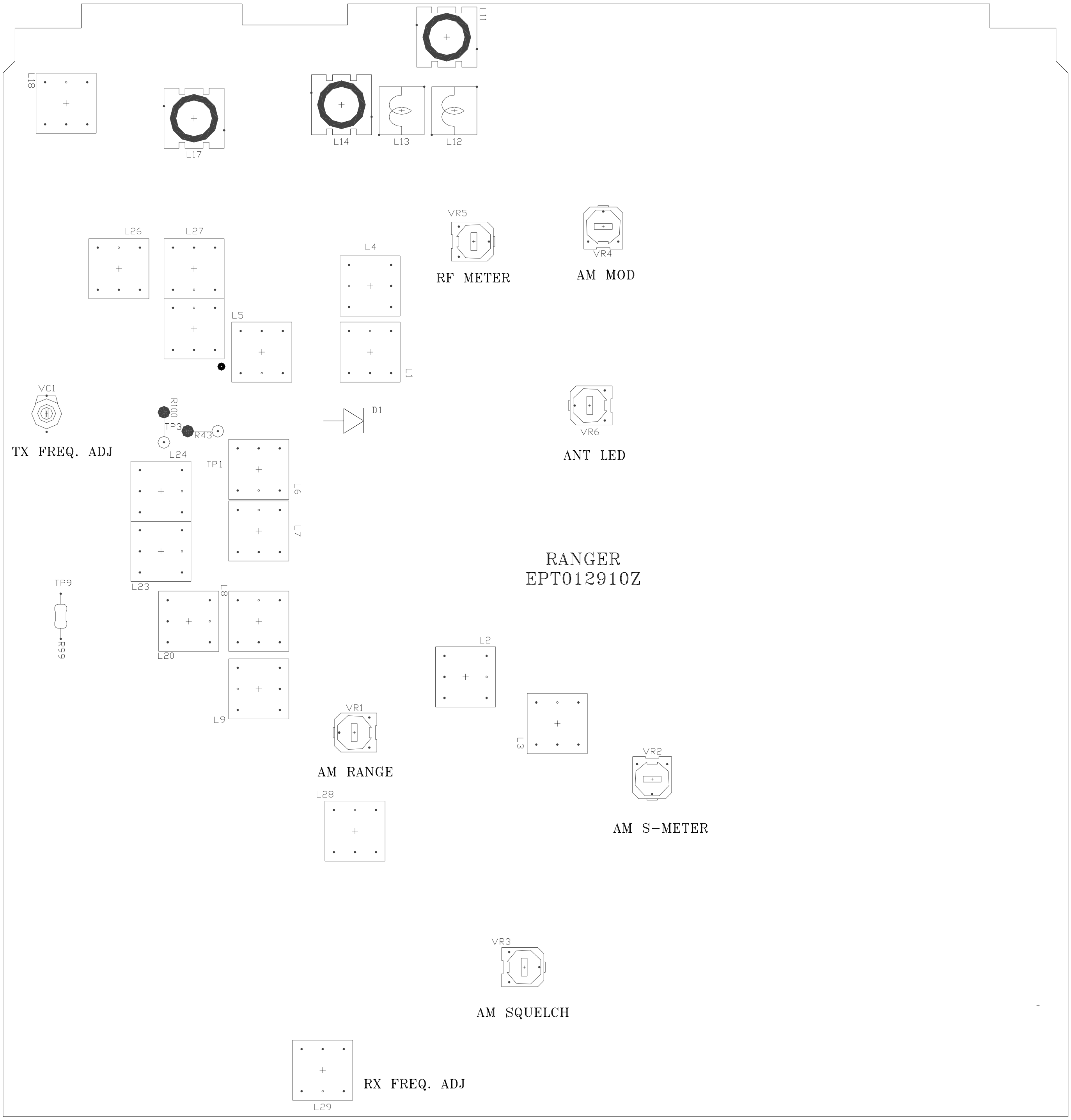


Figure 4-2 Receiver test setup

TR-127GK/DX MAIN PCB ADJUSTMENT LOCATION



5.0 PRECAUTIONS

The inherent quality of the solid-state components used in this transceiver will provide many years of continuous use. Taking the following precautions will prevent damage to the transceiver.

(i) Never key the transmitter unless an antenna or suitable dummy load is connected to the antenna receptacle.

(ii) Ensure that the input voltage does not exceed 16 VDC or fall below 11.

(iii) Transmitting over long periods can cause heat built-up and cause transmitter damage.

5.1 PERIODIC INSPECTION

This unit is aligned at the factory to deliver maximum performance. However, continued performance cannot be expected without periodic inspection and maintenance. Important points to be checked regularly are as follows;

Check Item	Action
Whip antenna (option)	If cracked or broken, replace it.
Coaxial cable	If sheath is cracked or immersed in water, install new coaxial cable.
Coaxial & power plug connections	If loosened, reconnect. If corroded, clean contacts.
Battery connection	If corroded, clean power terminals.
Ground terminal	If corroded, clean terminal.

5.2 FUSE REPLACEMENT

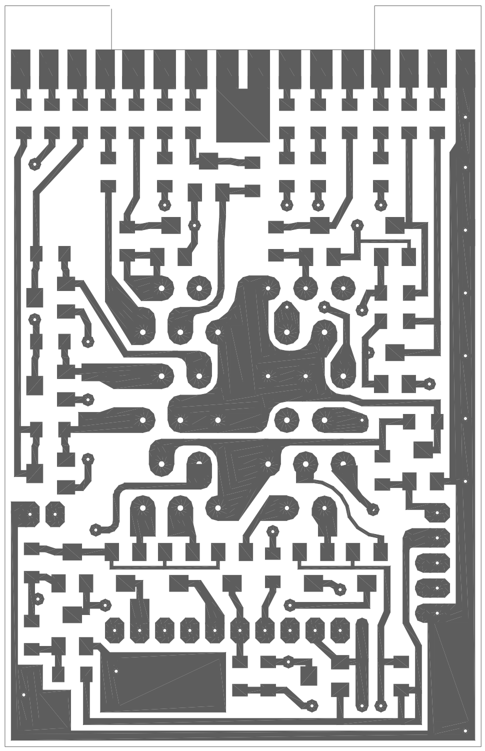
To protect the equipment from serious damage, a fuse is provided on the power supply lines. The fuse protects against over voltage / reverse polarity or internal fault of the equipment. If the fuse has blown, first find out the cause of the trouble before replacing it. A fuse rated for more than the transceiver requirement should not be used, since it may permanently damage the equipment. Damage due to over fusing is not covered by the warranty.

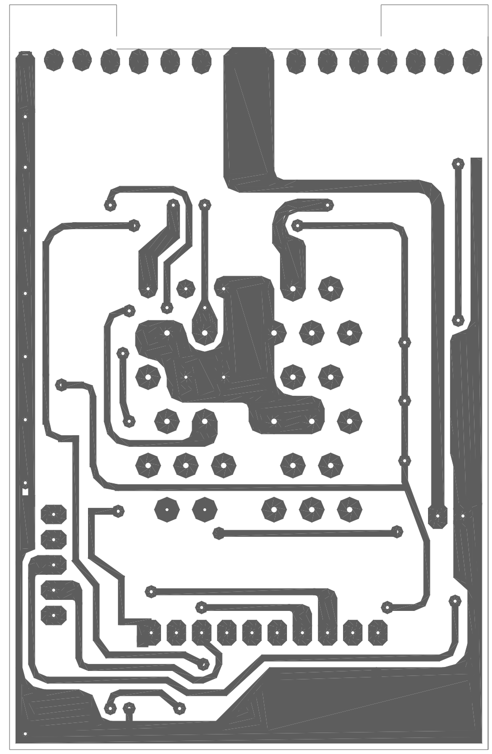
CHAPTER 6 DIAGRAMS & PARTS LIST

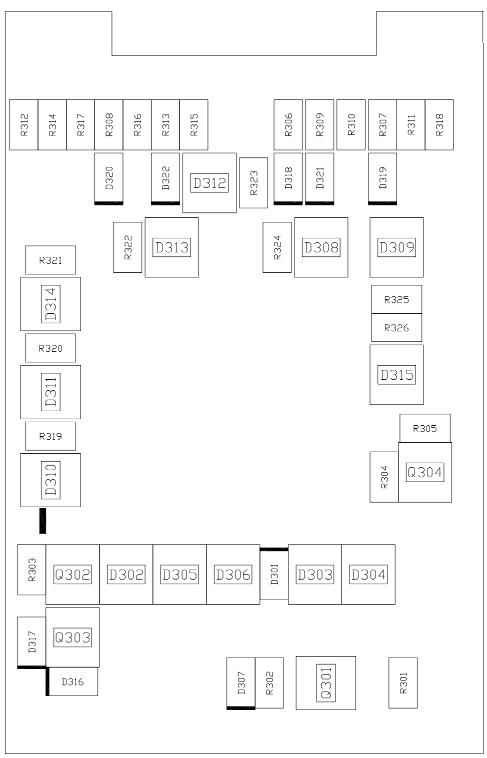
6.0 GENERAL

Information on most electrical and mechanical parts is included in the parts list. The reference designators are in alphanumeric order.

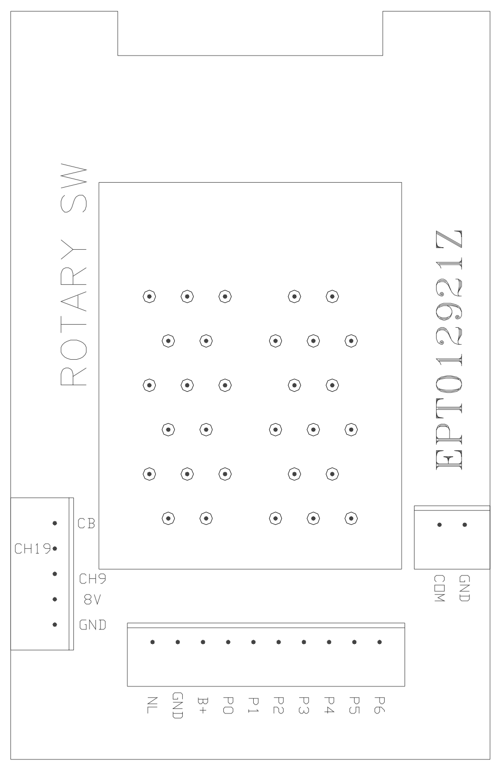
TR-127GK/DX ROTARY SWITCH PCB (EPT092920Z)







(SMD-COPPER SIDE)



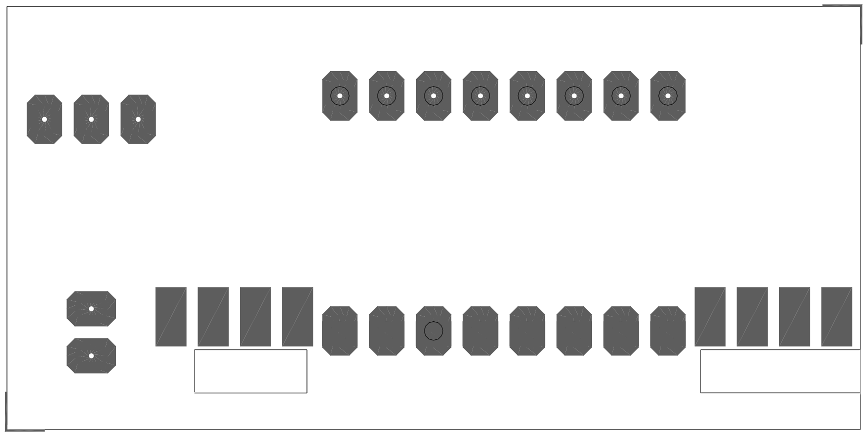
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PART LIST:

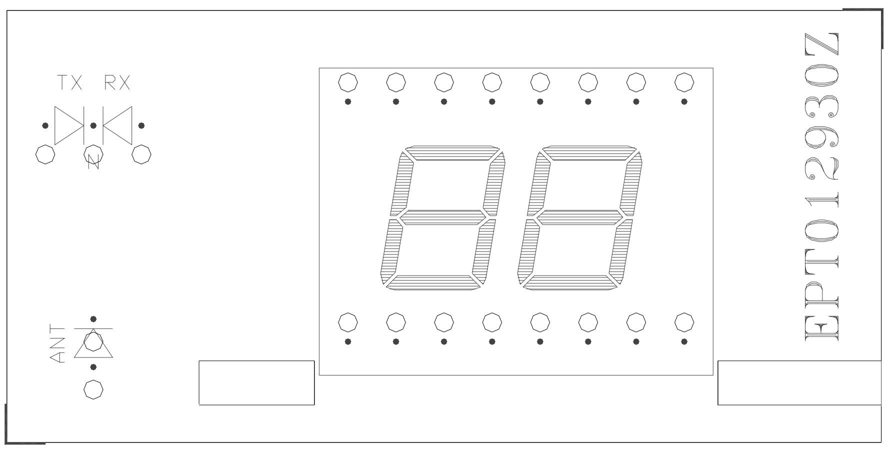
TR-127GK/DX ROTARY SW. P.C.B

ITEM	REFERENCE NUMBER	RANGER PART NUMBER	DESCRIPTION
1		EPT012921Z	ROTARY SW PCB
2	R305	RCY010004Z	CHIP/F/R 0.0 Ω 0.1W
3	R306	RCY013314Z	CHIP/F/R 330 Ω 0.1W
4	R307,R308,R309,R310, R311,R312,R313,R314, R315,R316,R317,R318,	RCY016814Z	CHIP/F/R 680 Ω 0.1W
5	D301,D307,D316,D317, D318,D319,D320,D321, D322	EDSS00355Y	DIODE (S.M.D.) 1SS355
6	D302,D303,D304,D305, D306,D308,D309,D310, D311,D312,D313,D314, D315	EDSS00181Y	DIODE (S.M.D.) 1SS181-TE85L
7	Q301,Q303,Q304	TYZRN1403Z	TR RN1403-TE85L
8	Q302	TYDTC114TK	TR DTC114TK
9	ROTARY SW	EWRT32059S	ROTARY SW GPS-0668
10	J303	EX07N48223	PCB CONN/S 2 PIN
11	J301	EX07N48222	PCB CONN/S 5 PIN
12	J302	EX07N48209	PCB CONN/S 10 PIN
13	J301(SH3044)	EX07N49403	PCB CONN/S 5 PIN
14	J302	EX07N49231	PCB CONN/S 10 PIN
15	J303	EX07N49245	PCB CONN/S 2 PIN

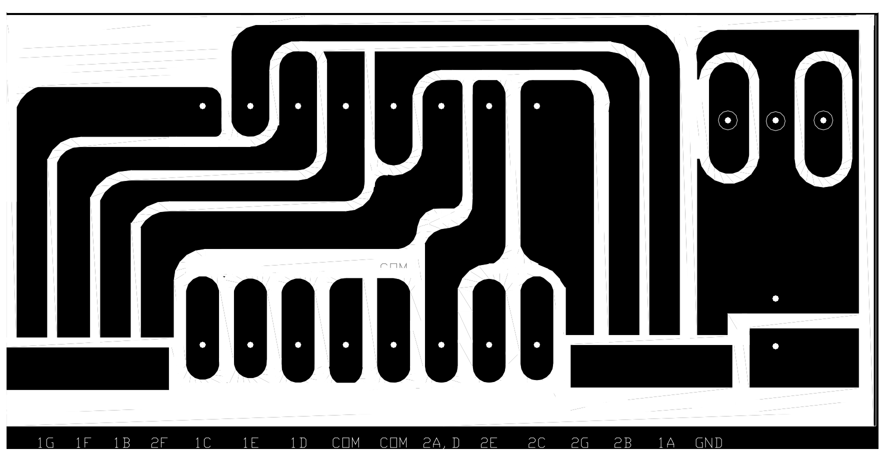
TR-127GK/DX DISPLAY PCB (EPT092930Z)



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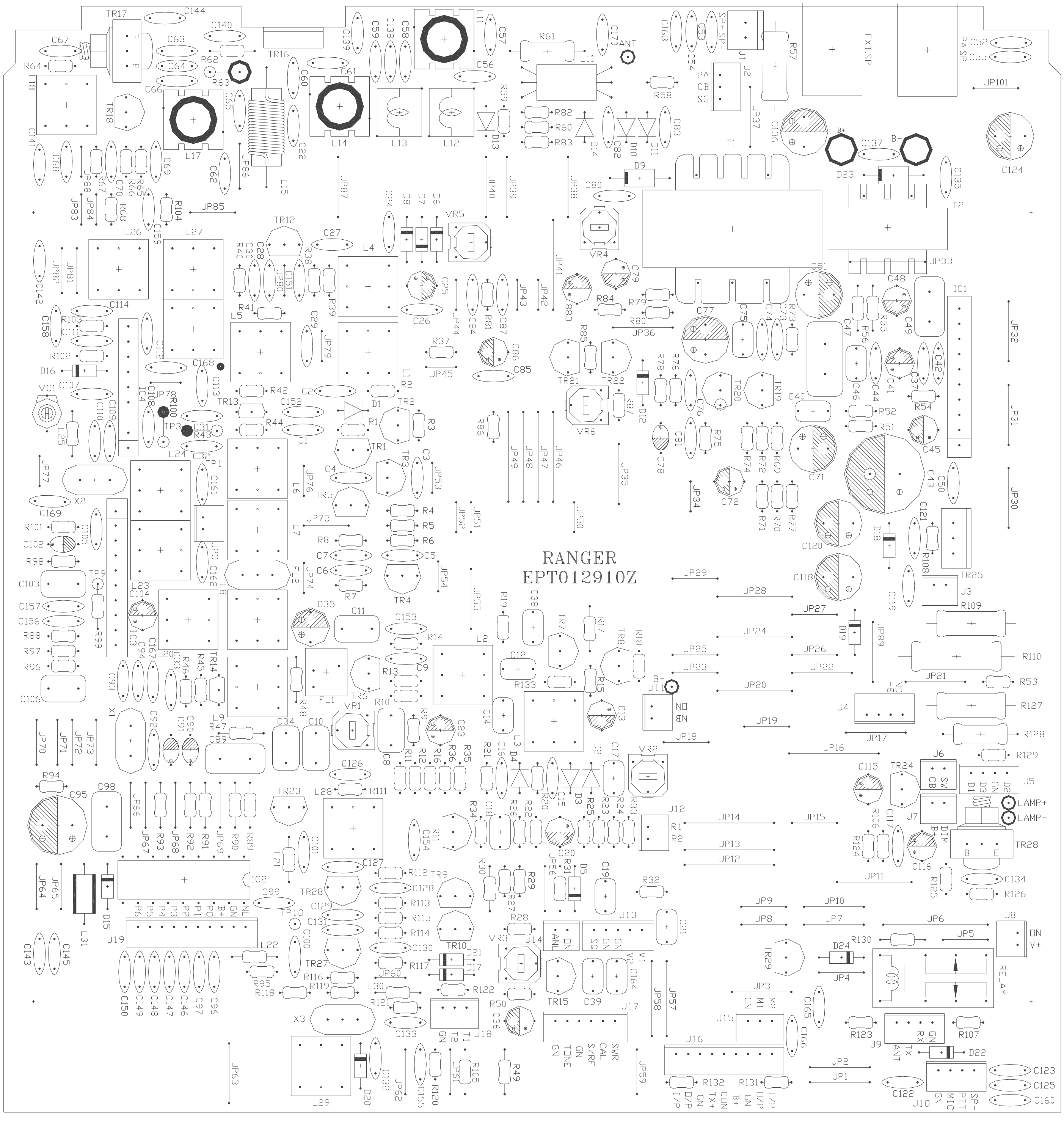
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PART LIST:

TR-127GK/DX DISPLAY P.C.B

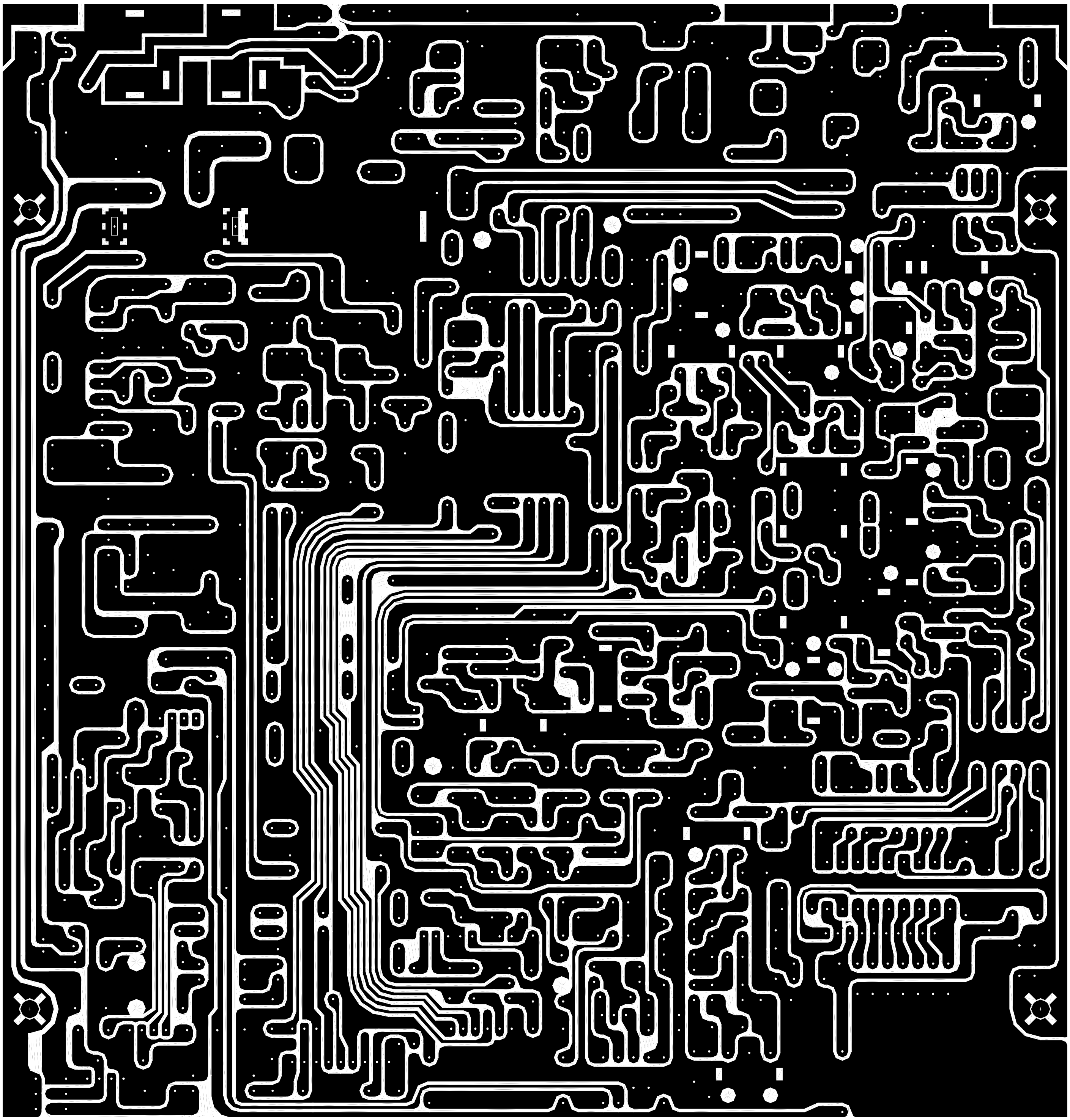
ITEM	REFERENCE NUMBER	RANGER PART NUMBER	DESCRIPTION
1		EPT012930Z	DISPLAY PCB
2	D201	EX01Y40004	LED 3mm RED/GREEN
3	LED DISPLAY	EX03N40016	LED DISPLAY GREEN
4	D202	EX01N40140	LED 3mm RED

TR-127GK/DX MAIN PCB (EPT012910A)



(COMPONENTS SIDE)

TR-127GK/DX MAIN PCB (EPT012910A)



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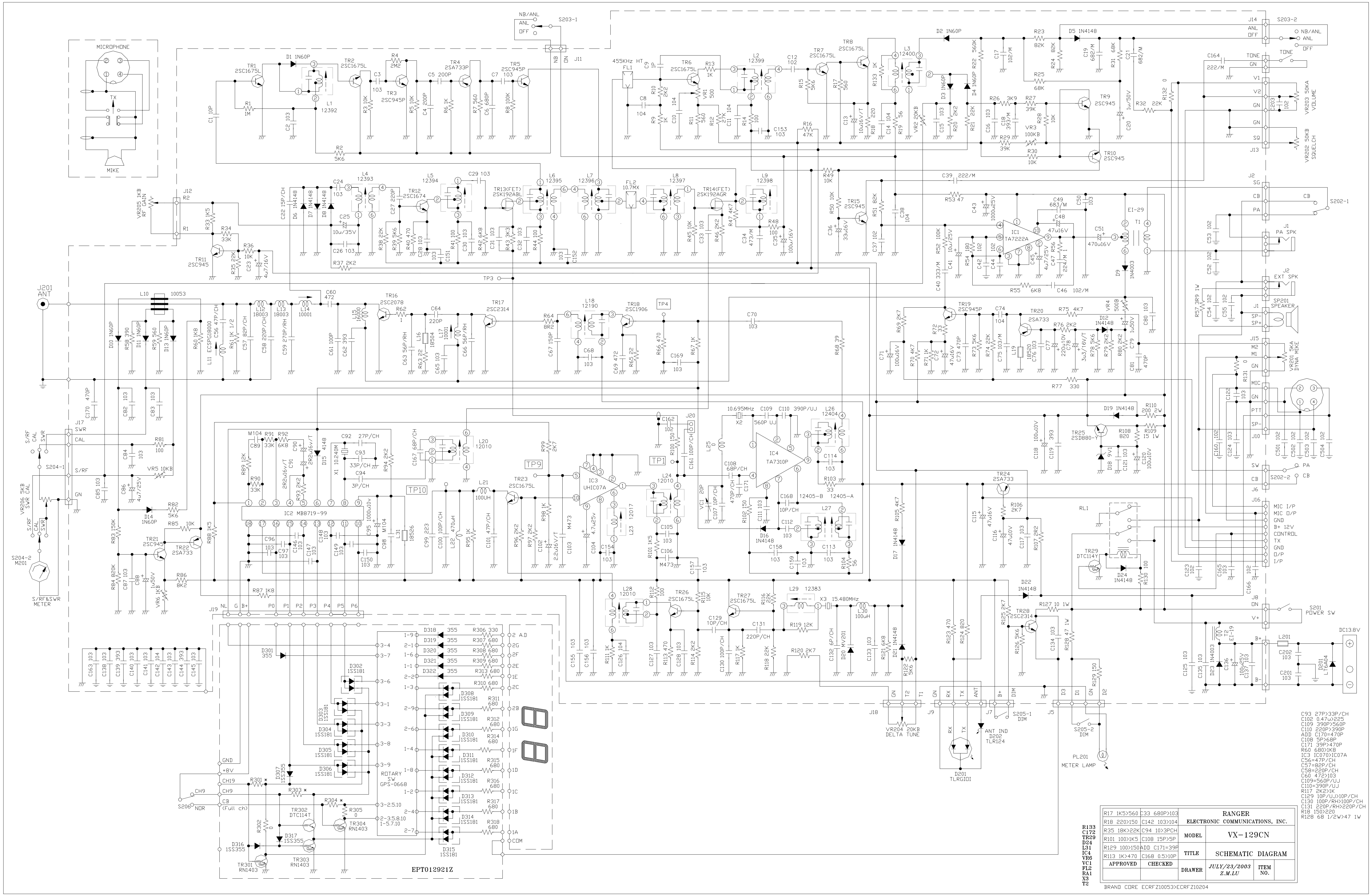
PART LIST
TR-127GK/DX MAIN PCB

REFERENCE NUMBER	RANGER PART NO.	DESCRIPTION
	EPT012910Z	MAIN PCB
R131,132	RCM160004Z	0 Ω 1/16W
R56,62	RCM161094Z	1 Ω 1/16W
R107	RCM162294Z	2.2Ω 1/16W
R64	RCM168294Z	8.2Ω 1/16W
R65	RCM162204Z	22 Ω 1/16W
R72,103	RCM163304Z	33 Ω 1/16W
R68	RCM163904Z	39 Ω 1/16W
R53	RCM164704Z	47 Ω 1/16W
R19,104	RCM165604Z	56 Ω 1/16W
R14,41,44,48,81,112,130	RCM161014Z	100Ω 1/16W
R58,102,129	RCM161514Z	150Ω 1/16W
R54	RCM161814Z	180Ω 1/16W
R18	RCM162214Z	220Ω 1/16W
R77	RCM163314Z	330Ω 1/16W
R40,66,113,123	RCM164714Z	470Ω 1/16W
R7,11,17,59	RCM165614Z	560Ω 1/16W
R108,124	RCM168214Z	820Ω 1/16W
R6,9,13,67,71,98,111,117,133	RCM161024Z	1K Ω 1/16W
R33,88,101	RCM161524Z	1.5KΩ 1/16W
R60,87	RCM161824Z	1.8KΩ 1/16W
R10,20,37,46,76,79,80,94,96,97,114	RCM162224Z	2.2KΩ 1/16W
R93	RCM162224Z	2.2KΩ 1/16W
R69,99,106,120,125	RCM162724Z	2.7KΩ 1/16W
R26	RCM163924Z	3.9KΩ 1/16W
R47,70,75,105	RCM164724Z	4.7KΩ 1/16W
R2,15,39,73,78,82,122,126	RCM165624Z	5.6KΩ 1/16W
R42,55,92,121	RCM166824Z	6.8KΩ 1/16W
R86	RCM168224Z	8.2KΩ 1/16W
R3,5,28,30,36,45,49,50,85,95, 115	RCM161034Z	10K Ω 1/16W
R89,119	RCM161234Z	12K Ω 1/16W
R21,32,35,38,74,116,118	RCM162234Z	22K Ω 1/16W
R12	RCM162734Z	27K Ω 1/16W
R34,90,91	RCM163334Z	33K Ω 1/16W
R27,29	RCM163934Z	39K Ω 1/16W
R16	RCM164734Z	47K Ω 1/16W
R25,31	RCM166834Z	68K Ω 1/16W
R23,24,51	RCM168234Z	82K Ω 1/16W
R8,52	RCM161044Z	100KΩ 1/16W
R83	RCM161544Z	150KΩ 1/16W
R22	RCM165644Z	560KΩ 1/16W
R84	RCM168244Z	820KΩ 1/16W
R1	RCM161054Z	1 M Ω 1/16W
R4	RCM162254Z	2.2MΩ 1/16W
R61	RCM121024Z	1K Ω 1/2W
R100	RCP161514Z	150 Ω 1/16W
R43	RCP163324Z	3.3K Ω 1/16W
R63	RCP142204Z	22 Ω 1/14W
R57	RFP103994Z	3.9 Ω 1W
R127	RFP101004Z	10 Ω 1W
R109	RFP101504Z	15 Ω 1W
R128	RCP104704Z	47 Ω 1W
R110	RFP202014Z	200Ω 2W
C9	CC0500101L	1PF 50WV
C1	CC0501004L	10PF 50WV
C61	CC0501015L	100PF 50WV
C67	CC0501515L	150PF 50WV
C4,5	CC0502015L	200PF 50WV
C27	CC0502215L	220PF 50WV
C73,81,170	CC0504715L	470PF 50WV
C6	CC0506815L	680PF 50WV
C110	CC0503915G	390PF 50WV
C109	CC0505615G	560PF 50WV
C94	CC0500301A	3PF 50WV
C132	CC0500602A	6PF 50WV
C107,129,168	CC0501004A	10PF 50WV
C22	CC0501504A	15PF 50WV
C92	CC0502704A	27PF 50WV
C93	CC0503304A	33PF 50WV
C56,101	CC0504704A	47PF 50WV
C108,167	CC0506804A	68PF 50WV
C57	CC0508204A	82PF 50WV
C100,130,161	CC0501015A	100 PF 50WV
C58,64,131	CC0502215A	220 PF 50WV
C59	CC0502715A	270 PF 50WV
C63,66	CC0505604D	56 PF 50WV
C12,37,42,44,52,53,54,55,123, 160,162	CC0501027L	0.001UF 50WV
C2,3,7,15,16,24,26,28,29,30,31,32,50,65,68,70,76,80,82,83,84,85,87,96,97,105,111,112,113,114,117,121,122,125,127,128,133,134,135,137,138,140,141,143,145,146,147,148,149,150,151,152,153,154,155,156,157,158,159,163,165,166,169,33	CC0501037L	0.01 UF 50WV
C8,10,11,14,38,74,126,142	CC0501047L	0.1 UF 50WV
C60,69	CC0504727L	0.0047UF 50WV
C99	CC0502237L	0.022UF50WV
C62,119,139,144	CC0503937L	0.039UF50WV
C17,46	CM0501024Z	0.001UF50WV
C75	CM0501035Z	0.01 UF 50WV
C89,98	CM0501045Z	0.1 UF 50WV
C39,164	CM0502225Z	0.0022UF 50WV
C19,21	CM0506825Z	0.0068UF 50WV
C40	CM0503335Z	0.033UF50WV
C18	CM0503935Z	0.039UF50WV
C34,103,106	CM0504735Z	0.047UF50WV
C49	CM0506835Z	0.068UF50WV
C47	CM0502245Z	0.22 UF 50WV
C90,91,102	CT0162256Z	2.2 UF 16WV
C78	CT0163356Z	3.3 UF 16WV
C13	CT0161066Z	10 UF 16WV
C20,79,88	CE0501057Z	1.0 UF50WV
C23,45,86,104	CE0504757Z	4.7 UF50WV
C36	CE0163367Z	33 UF 16WV
C48,72,115,116	CE0164767Z	47 UF 16WV
C77,124	CE0162277Z	220UF 16WV
C35,71,118,120,136	CE0161077Z	100UF 16WV
C51	CE0164777Z	470UF 16WV
C95	CE0161087Z	1000UF16WV
C41	CE0251067Z	10 UF 25WV
C43	CE0251087Z	1000UF25WV
C25	CE0501067Z	10UF 50WV
C171	CK1471AB5A	470PF 50WV
FL1	EFCFU455HT	CFU455HT
FL2	EFCFE107MX	SFE10.7MX RED
X1	EYCAB10240	10.240MHZ
X2	EYCAB10695	10.695MHZ
X3	EYCAE15480	15.480MHZ
IC1	ENTA07222A	TA7222AP
IC2	ENRG871999	RCI-8719A
IC3	ENNOHIC07A	UHIC017A
IC4	ENTA07310P	TA7310P
TR1,2,6,7,8,23,27,28	T2SC01675L	2SC1675L

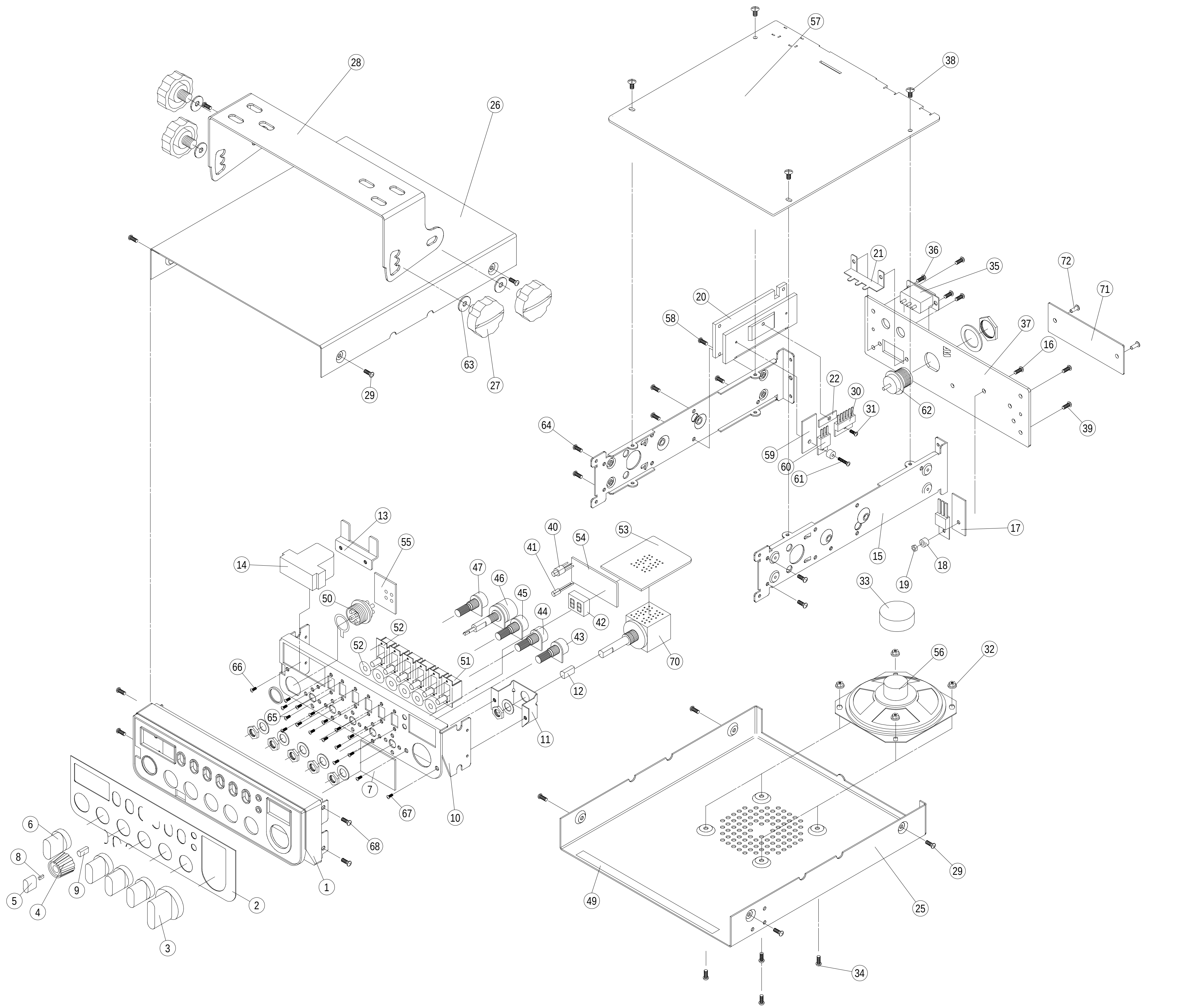
TR3,5,9,10,11,15,19,21	T2SC00945P	2SC945P
TR4,20,22,24	T2SA00733P	2SA733P
TR12	T2SC01674L	2SC1674L
TR13	F2SK00192L	2SK192ABL
TR14	F2SK00192R	2SK192A-GR
TR16	T2SC02078D	2SC2078D
TR17,28	T2SC02314F	2SC2314F
TR18	T2SC01906Z	2SC1906
TR25	T2SD00880Y	2SD880Y
TR29	TDTC0114YS	DTC114YSA
D1,2,3,4,10,11,13,14	ED1N00060P	1N60P
D5,6,7,8,12,15,16,17,19,21,22, 24	ED1N04148Z	1N4148
D9,23	ED1N04003Z	1N4003
D18	EDZD05919Z	9.1V 0.5W
D20	ED1V00136Z	1SV136
L1	ECIFT12392	I.F.T P1613R
L2	ECIFT12399	I.F.T
L3	ECIFT12400	I.F.T
L4	ECIFT12393	I.F.T P1515F
L5	ECIFT12394	I.F.T
L6	ECIFT12395	I.F.T
L7	ECIFT12396	I.F.T
L8	ECIFT12397	I.F.T
L9	ECIFT12398	I.F.T
L18	ECIFT12190	I.F.T
L20,24,28	ECIFT12010	I.F.T 18501N
L23	ECIFT12017	I.F.T XP1376Y
L26	ECIFT12404	I.F.T
L27	ECIFT12405	I.F.T
L29	ECIFT12383	I.F.T 9441HM
L15	ECCHK16000	0.47UH
L21,30	ECCHK16142	100 UH
L22	ECCHK16146	470 UH
L14,17	ECRFZ10001	0.23UH
L10	ECRFZ10204	BF2159576
L11	ECSPG18000	SPRING COIL
L12,13	ECSPG18003	SPRING COIL
L16	ECBAD18504	BEAD COIL
L19	ECBAD18520	BEAD COIL
L31	ECBAD18526	BEAD COIL
T1	ECCHK16294	CHOKE COIL
T2	ECCHK16004	CHOKE COIL
VR1,4	RE50100066	S/F/R 500Ω 3P
VR2	RE20300030	S/F/R 20KΩ L
VR3	RE10400079	S/F/R 100KΩ KVSF6-637A
VR5	RE10300078	S/F/R 10KΩ
VR6	RE10200072	S/F/R 1K Ω L
VC1	CV050200AZ	TRIMMER/C 20PF 5Q
B+	ECBAD18582	BEAD COIL
RELAY	EX05N40850	RELAY 12V
J3,6,8,11,12,14	EX07N48223	P/C/S 2P
J2,15,18	EX07N48350	P/C/B 3P
J4,5,9,10	EX07N48490	P/C/B 4P
J13	EX07N48222	P/C/B 5P
J17	EX07N48331	P/C/B 6P
J16	EX07N48543	P/C/B 9P
J19	EX07N48209	P/C/B 10P
J1	EX07N41330	P/C/B 2P T
J7	WX01070703	JUMP WIRE
JP34,42,43,44,45,50,51,52,53, 54,60,74,76,77,78,79,80,83, 84,88	WX01070705	JUMP WIRE

JP4,5,8,9,15,18,19,23,25,26,27 ,56,59,61,62,64,65,66,67,68, 69,70,71,72,73,75,81,82,85, 86,29,101,L25	WX01070708	JUMP WIRE
JP1,2,3,7,10,17,21,22,30,31,32 ,35,36,37,38,39,40,55,63,87, 89	WX01070710	JUMP WIRE
JP11,20,24,28,33,57,58	WX01070713	JUMP WIRE
JP12,13,14,16,41,46,47,48,49	WX01070715	JUMP WIRE
JP6	WX01070718	JUMP WIRE
B-	WJ0005005Z	LEAD WIRE
PA ,EXT SP	EX06N41045	EAR JACK

TR-127GK/DX SCHEMATIC DIAGRAM



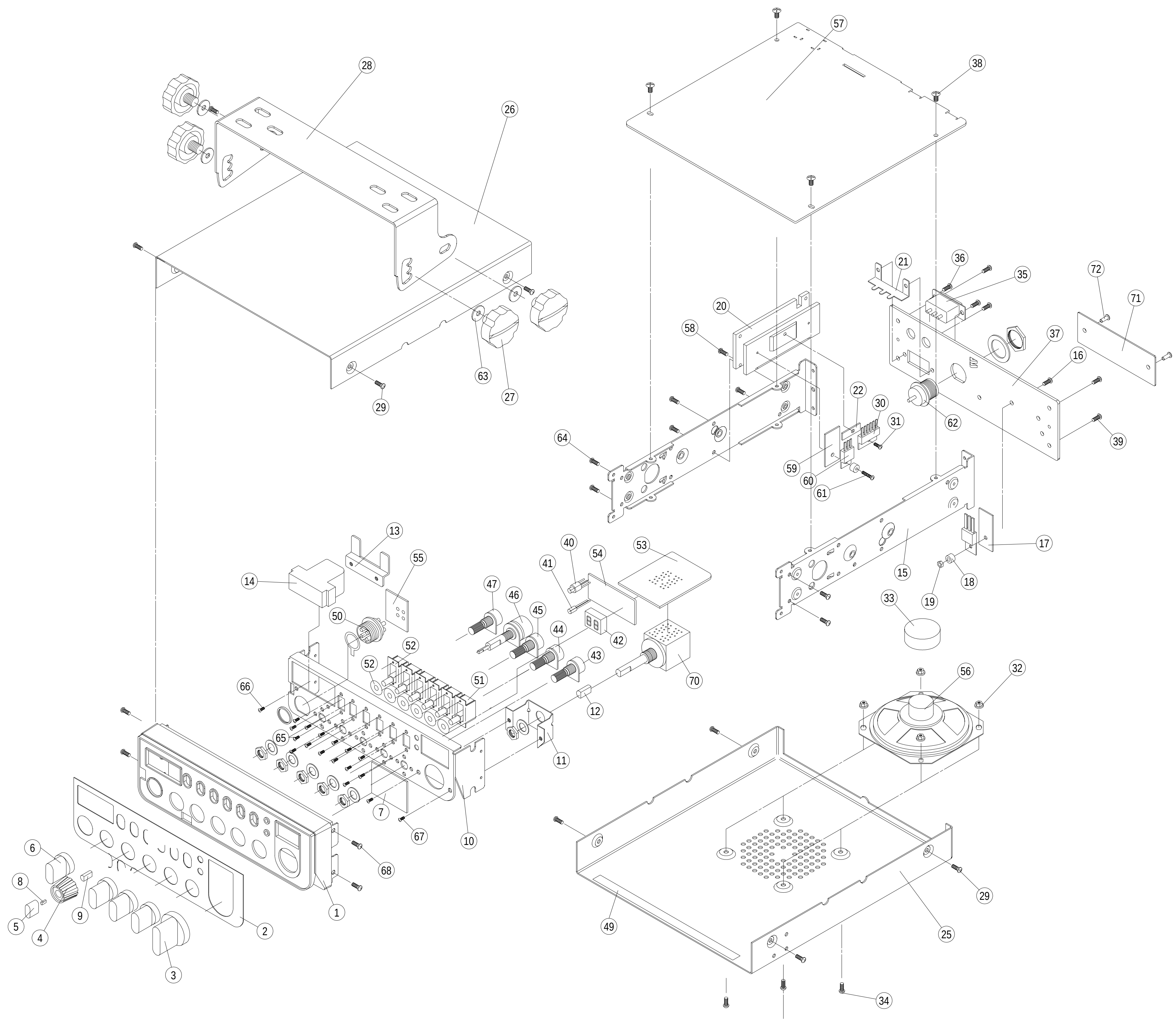
TR-127GK EXPLODE DRAWING



TR-127GK MECHANICAL PART

NO.	PART NO.	DESCRITTION	QT'Y
1	PT240N010H	FRONT PANEL (GOLD)	1
2	BT240N020F	ID PLATE TR-127	1
3	PT2400020H	KNOB A (GOLD)	1
4	PT2400040H	KNOB C (GOLD)	1
5	PT2400050H	KNOB D (GOLD)	1
6	PT2400030H	KNOB B (GOLD)	4
7	PTDX55020A	DISPLAY WINDOW (AMBER)	1
8	MT3600100T	D SPRING D #8500	1
9	MT3600090T	D SPRING B #7800	1
10	MT240N010X	FRONT CHASSIS	1
11	MT3600042X	CH SWITCH BRACKET	1
12	MT3600080T	D SPRING A #6600	1
13	MT240N030X	METER BRACKET	1
14	EX03N40016	SWR METER	1
15	MT1200031X	SIDE BRACKET	2
16	JS052012MN	SCREW M2X12	1
17	XZZZ90020Z	INSULATING PLATE 18*13 MM	1
18	XZZZ90003Z	INSULATING RING	2
19	JN242012ZS	NUT M2	1
20	MT1200121X	HEATSINK	1
21	MT3600050X	DC SOCKET BRACKET	1
22	LZZZ61008Z	IC SHIELD B	1
23	MT240N060X	SHIELD HOUSING (EL)	0
24	EPT91V130Z	EL DRIVE PCB	0
25	MT1200021K	BOTTOM HOUSING	1
26	MT1200011K	TOP HOUSING	1
27	XZZZ90007Z	MOUNTING SCREW	4
28	MT1200090A	MOUNTING BRACKET	1
29	JS053006MN	SCREW M3X6	8
30	ENTA07222P	TA7222AP	1
31	JS013006MV	SCREW M3X6	1
32	JN263035ZS	NUT M3	4
33	QT7799010A	RUBBER COVER	1
34	JS053008MB	SCREW M3X8	4
35	EX06T40007	DC SOCKET	1
36	JS053006MN	SCREW M3X6	2
37	MT1200110M	BACK PLATE	1
38	JS053006MN	SCREW M3X6	4
39	JS052606MN	SCREW M2.6X6	4
40	EX01N40004	LED RED/GREEN 3 MM	1
41	EX01N40133	LED RED 3 MM	1
42	EX03N40016	LED DISPLAY GREEN	1
43	RV20303575	VR 20 KB (CLARIFY)	1
44	RV50203574	VR 5 KB (SWR CAL)	1
45	RV10203584	VR 1 KB (RF GAIN)	1
46	RV50303602	VR 50KB/50KA/SW (VOL/SQ)	1
47	RV10203573	VR 1KA (MIC GAIN)	1
48	MT240N020X	SCREW 支架	1
49	LZZZ60001Z	SHIELD CLOTH	2
50	EX06N41020	MIC SOCKET 4 P	1
51	EWSL31026K	SLIDE SWITCH 2 N	5
52	EWSL31027K	SLIDE SWITCH 3 N	1
53	EPT012920Z	ROTARY SWITCH PCB	1
54	EPT012930Z	DISPLAY PCB	1
55	EPT012950Z	MIC PCB	1
56	ES300835SQ	SPEAKER 8 OHM 3 W 3.5 INCH	1
57	EPT012910Z	MAIN PCB	1
58	JS052606MN	SCREW M2.6X6	4
59	XZZZ90064Z	INSULATING PLATE 13*18*0.15 MM	1
60	T2SD00880Y	TR 2SD880Y	1
61	JS052012MN	SCREW M2X12	1
62	EX06T41019	ANT SOCKET	1
63	XZZZ90188Z	FIBER WASHER 4.9*15*1.0T	1
64	JS053006MN	SCREW M3X6	4
65	JS052604MN	SCREW M2.6X4	12
66	JS053006MN	SCREW M3X6	2
67	JS053006MN	SCREW M3X6	2
68	JS033006MN	SCREW M3X6	4
69	XZZZ90296A	MASK PLATE (SW) ? 20MM	6
70	EWRT32059Z	ROTARY SWITCH GPS-0668	1
71	BT240N030F	FCC PLATE TR-127	1
72	JF413206ZX	BLIND RIVET 3.2x6mm	2

TR-127DX EXPLODE DRAWING



TR-127DX MECHANICAL PART

NO.	PART NO.	DESCRITTION	QT'Y
1	PT240N010A	FRONT PANEL (CHROME)	1
2	BT240N020F	ID PLATE TR-127	1
3	PT2400020C	KNOB A (CHROME)	1
4	PT2400040C	KNOB C (CHROME)	1
5	PT2400050C	KNOB D (CHROME)	1
6	PT2400030C	KNOB B (CHROME)	4
7	PTDX55020A	DISPLAY WINDOW (AMBER)	1
8	MT3600100T	D SPRING D #8500	1
9	MT3600090T	D SPRING B #7800	1
10	MT240N010X	FRONT CHASSIS	1
11	MT3600042X	CH SWITCH BRACKET	1
12	MT3600080T	D SPRING A #6600	1
13	MT240N030X	METER BRACKET	1
14	EX03N40016	SWR METER	1
15	MT1200031X	SIDE BRACKET	2
16	JS052012MN	SCREW M2X12	1
17	XZZZ90020Z	INSULATING PLATE 18*13 MM	1
18	XZZZ90003Z	INSULATING RING	2
19	JN242012ZS	NUT M2	1
20	MT1200121X	HEATSINK	1
21	MT3600050X	DC SOCKET BRACKET	1
22	LZZZ61008Z	IC SHIELD B	1
23	MT240N060X	SHIELD HOUSING (EL)	0
24	EPT91V130Z	EL DRIVE PCB	0
25	MT1200021K	BOTTOM HOUSING	1
26	MT1200011K	TOP HOUSING	1
27	XZZZ90007Z	MOUNTING SCREW	4
28	MT1200090A	MOUNTING BRACKET	1
29	JS053006MN	SCREW M3X6	8
30	ENTA07222P	TA7222AP	1
31	JS013006MV	SCREW M3X6	1
32	JN263035ZS	NUT M3	4
33	QT7799010A	RUBBER COVER	1
34	JS053008MB	SCREW M3X8	4
35	EX06T40007	DC SOCKET	1
36	JS053006MN	SCREW M3X6	2
37	MT1200110M	BACK PLATE	1
38	JS053006MN	SCREW M3X6	4
39	JS052606MN	SCREW M2.6X6	4
40	EX01N40004	LED RED/GREEN 3 MM	1
41	EX01N40133	LED RED 3 MM	1
42	EX03N40016	LED DISPLAY GREEN	1
43	RV20303575	VR 20 KB (CLARIFY)	1
44	RV50203574	VR 5 KB (SWR CAL)	1
45	RV10203584	VR 1 KB (RF GAIN)	1
46	RV50303602	VR 50KB/50KA/SW (VOL/SQ)	1
47	RV10203573	VR 1KA (MIC GAIN)	1
48	MT240N020X	SCREW 支架	1
49	LZZZ60001Z	SHIELD CLOTH	2
50	EX06N41020	MIC SOCKET 4 P	1
51	EWSL31026K	SLIDE SWITCH 2 N	5
52	EWSL31027K	SLIDE SWITCH 3 N	1
53	EPT012920Z	ROTARY SWITCH PCB	1
54	EPT012930Z	DISPLAY PCB	1
55	EPT012950Z	MIC PCB	1
56	ES300835SQ	SPEAKER 8 OHM 3 W 3.5 INCH	1
57	EPT012910Z	MAIN PCB	1
58	JS052606MN	SCREW M2.6X6	4
59	XZZZ90064Z	INSULATING PLATE 13*18*0.15 MM	1
60	T2SD00880Y	TR 2SD880Y	1
61	JS052012MN	SCREW M2X12	1
62	EX06T41019	ANT SOCKET	1
63	XZZZ90188Z	FIBER WASHER 4.9*15*1.0T	1
64	JS053006MN	SCREW M3X6	4
65	JS052604MN	SCREW M2.6X4	12
66	JS053006MN	SCREW M3X6	2
67	JS053006MN	SCREW M3X6	2
68	JS033006MN	SCREW M3X6	4
69	XZZZ90296A	MASK PLATE (SW) ? 20MM	6
70	EWRT32059Z	ROTARY SWITCH GPS-0668	1
71	BT240N030F	FCC PLATE TR-127	1
72	JF413206ZX	BLIND RIVET 3.2x6mm	2

RANGER
Communications, Inc.

AT0127040A